Yr Glanaf – our own electric car

Yr Glanaf is a Welsh phrase meeting 'The Cleanest'

Why Wood?

A typical saloon car embodies 17 tonnes of CO_2 in its manufacture with the proportional associated energy input.The equivalent energy cost of wood is around 10% of this amount.

A typical car creates 15 tonnes of CO_2 during 100,000 miles of average driving and around 7 tonnes of CO_2 at the end of its life to recycle the metal materials. By contrast, a wooden vehicle provides energy output at the end of its life and is substantially CO_2 neutral.

Western Red Cedar is as strong and as light as aluminium.

Western Red Cedar is durable and weather resistant with no treatment essential.

Crash worthy - by design can meet NCAP and US crash and roll-over safety requirements.

Wood use requires forest planting and management:

Forests absorb CO2
More forests = cleaner air
More cars made of wood = less CO2 = cleaner air
More cars made of wood = less energy use = less global warming
Wood is less expensive than metal, especially after an initial phase of annual forest planting and growth

Why electric?

More efficient use of energy.
High degree of energy recovery from deceleration = even more efficient use of energy.
Electric motors have very little to wear out = less energy in repair or maintenance.
Better performance, clear conscience!
Can be supported by solar charging at home / office.

Why three wheels?

Two independently driven rear wheels with trailing arm suspension allow the vehicle to tilt into corners, pivoting about the front wheel on the vehicle centre line.

Four wheels would require active suspension on the front also = higher cost / complication and no performance improvement.

Rear wheels carry our primary steering by distributing torque laterally in response to steering demand and vehicle speed - thus front wheel steer is a secondary feature.

BUT aren't three wheels less stable? Think of the Reliant Robin!

Not true:
Mass is kept low down with batteries under the seats.
Mass is centred slightly rear of vehicle mid-point.
Drive is dynamically adjusted to independent rear wheel motors, based on acceleration demand; steering demand and vehicle attitude.
Aerodynamic shape is designed to increase downforce on front wheel as vehicle speed increases.
Steering sensitivity reduces with speed.
Active suspension tilts vehicle into corners.

Why no numbers in the display system?

Colour and motion frequency conveys speed information to driver without the need for eyes to be diverted from the road - peripheral vision continuously recognises colour and pulsation of light.

Why a joystick and not a steering wheel?

Steering wheels are left over from the days of steam engines that required very large force to mechanically turn wheels.
Many injuries are caused by drivers having the steering wheel forced into their chest in a collision.
Joystick can be centre and therefore eliminate the need to have left or right hand versions of a car (whilst vehicle is stationary either side control can be selected and driver display moves accordingly).
The joystick is a "force" joystick; it does not move but responds to the force exerted by the driver. Push = go forward. Pull = slow-down. Push left or twist left = turn left etc.
Joystick can be tuned to driver feel.
After application of force, the driver can simply rest hand on the joystick for the vehicle to continue with the same tractive force - removal of hand from joystick causes a slow-down akin to lifting a foot off an accelerator.
Rapid application of force = rapid acceleration / braking action.
More force = more action.
Steering and driving carried out simultaneously.
All critical electrical systems (including the joystick control and batteries) on the vehicle are duplicated so that no single failure can cause loss of control.

Other information

Battery packs contain all charging and management electronics.
Battery packs are modular and can be replaced, (as our battery technology evolves) from beneath the vehicle.
Travel distance of around 200 miles is possible.
Total battery capacity is 30kWhr.
Unladen weight of vehicle circa 700kg.
Designed and manufactured in Caerphilly.